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FIG. 1.

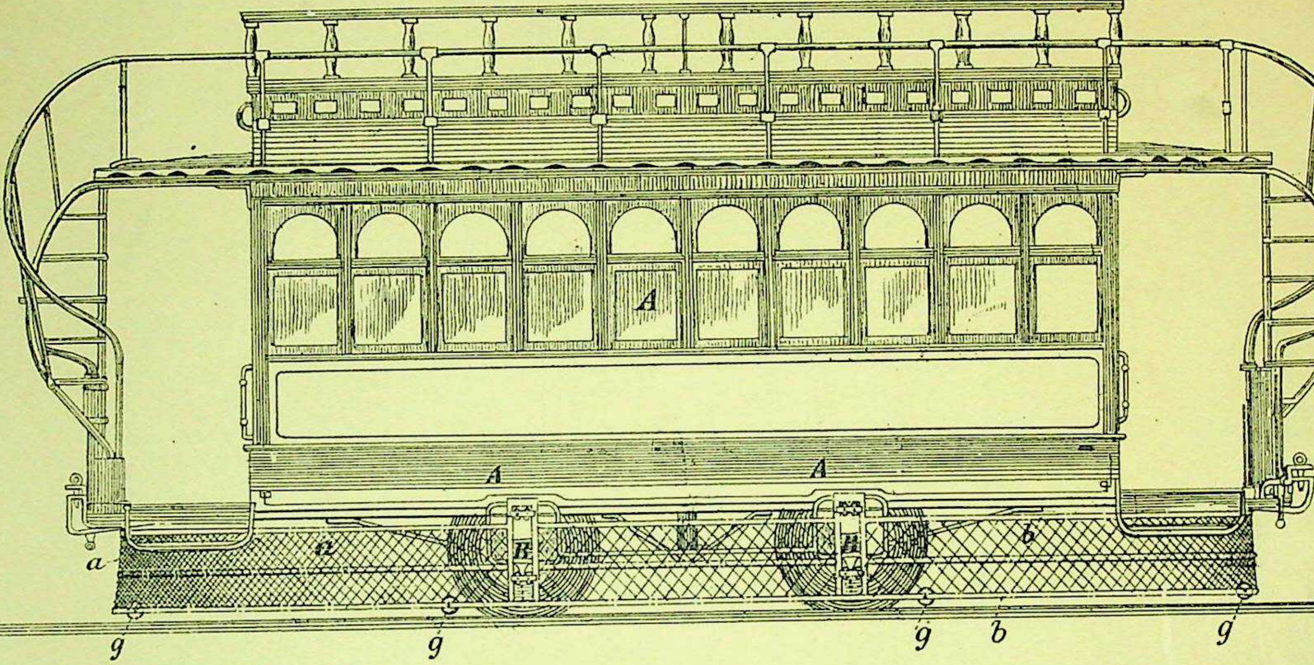


FIG. 1a.

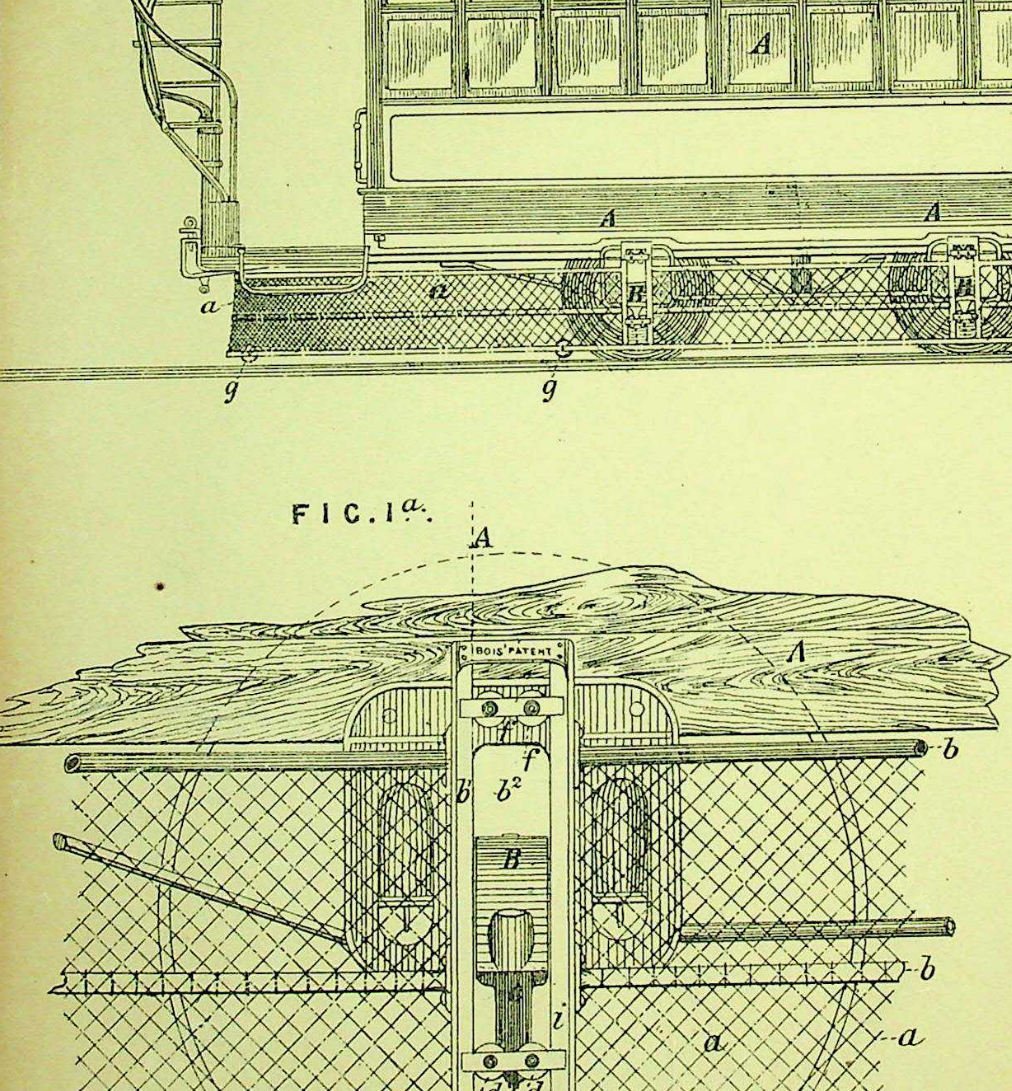
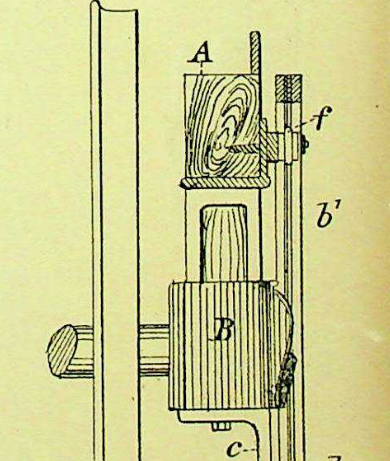


FIG. 2.



A.D. 1875, 5th January. N° 45.

Guard for Tramway Cars, &c.

LETTERS PATENT to Alexis Bois, of Brussels, in the Kingdom of Belgium, Civil Engineer, for the Invention of "An Improved Guard or Safety Apparatus Applicable to Tramway Cars and other Vehicles."

Sealed the 29th June 1875, and dated the 5th January 1875.

PROVISIONAL SPECIFICATION left by the said Alexis Bois at the Office of the Commissioners of Patents, with his Petition, on the 5th January 1875.

I, Alexis Bois, of Brussels, in the Kingdom of Belgium, Civil Engineer, do hereby declare the nature of the said Invention for "An Improved Guard or Safety Apparatus Applicable to Tramway Cars and other Vehicles," to be as follows:—

My Invention relates to an improved guard or safety apparatus applicable to tramway cars and other vehicles for the purpose of preventing accidents to passengers or others who may fall or be thrown down in the path of the said vehicles, and it consists in covering or enclosing, entirely or partially, by a guard or protector the wheels of the said vehicles and the space between the frame of such vehicles and the rails, thus preventing the possibility of persons falling or rolling under the said cars or vehicles and being injured by the wheels, as frequently happens when the wheels are left unguarded.

The guard or safety apparatus with which I cover or enclose the wheels of tramway cars and other vehicles consist of a shield of sheet metal, or a grating of iron or other bars, or a trellis or network of wire or other material affixed to a metal or other frame shaped for the purpose.

It is desirable that the said guard or safety apparatus be so connected to the vehicle that its lower edge be constantly at the same distance from the rails and as near the said rails as possible. I therefore mount the said guard upon or suspend it to the axles of the wheels, or by preference to the axle boxes of the said wheels. When the said guard is supported directly on the axles suitable bearings arranged to support the guard rest upon the said axles. When the guard is supported by the axle boxes, each of the said axle boxes at that part where it projects from the axle guards is provided with friction rollers, either grooved or flanged, mounted and capable of revolving on axes carried by the said axle box or by an arm or plate affixed thereto. The said friction rollers are intended to support the said guard and to guide it in any vertical motion which might be communicated accidentally thereto. For this purpose I make in the guard framing vertical slides or slots, which fit exactly upon the friction rollers on each axle box, allowing however a certain amount of play or travel below the lower friction rollers.

If preferred the arrangement of the friction rollers herein-before described may be inverted, that is to say, the slots or slides may be formed in or on the axle boxes, and the friction rollers may be mounted on the guard frame; or a similar effect may be obtained by means of sliding pieces on the axle box or on the guard frame working in slides formed in the guard frame or axle box respectively, or the said frame may be connected to each of the axle boxes by rods adjusted as in an ordinary link motion.

It will be readily understood that the guard frame being supported or suspended as herein-before described, and being adjusted so that its lower edge is at the required distance above the rails, it will invariably maintain its level as long as the wheels of the car are upon the rails, but should the said wheels from any cause leave the rails the lower edge of the guard might come in contact with the ground or pavement, and strike against any stones or other obstructions in the way. I therefore mount upon the lower part of the guard frame a certain number of small wheels projecting below the said guard to within a short distance of the rails; the said wheels support the guard when on the ground, and roll over any inequalities in the road. The said safety guard is made to extend down from near the under part of the frame of the car or vehicle to within a short distance of the rails and the ground and all round the car or vehicle, passing behind the steps and under the ends of the said vehicle; or one safety guard may be made to cover or enclose the wheels on one side of the car, and another safety guard may be used to cover or enclose the wheels on the other side of the said car, or each wheel may be covered or enclosed separately by one of my safety guards. Apertures closed by suitable doors may be made in different parts of my safety guards.

The accompanying Drawing represents a guard or safety apparatus constructed according to my Invention applied to a tramway car. *a, a,* is the car; *b* is the guard, which consists of a network of wire affixed to a metal frame *c, c, c.* *d, d,* are the axle boxes, which are provided with rollers A, which rollers work in and support and guide the guard *a* by taking into a slot or slide c^1 formed by the guard frame *c.* B, B, are the small supporting wheels for carrying the guard over the ground if required.

The Drawing hereunto annexed is intended merely to illustrate one mode of construction of my guard or safety apparatus and means employed by me in connecting the same to the axle boxes, but the construction of the said guard and the mode of connecting it to the car or vehicle may be varied, as herein-before described.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Alexis Bois in the Great Seal Patent Office on the 2nd July 1875.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, ALEXIS BOIS, of Brussels, in the Kingdom of Belgium, Civil Engineer, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Fifth day of January, in the year of our Lord One thousand eight hundred and seventy-five, in the thirty-eighth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Alexis Bois, Her special license that I, the said Alexis Bois, my executors, administrators, and assigns, or such others as I, the said Alexis Bois, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "AN IMPROVED GUARD OR SAFETY APPARATUS APPLICABLE TO TRAMWAY CARS AND OTHER VEHICLES," upon the condition (amongst others) that I, the said Alexis Bois, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Alexis Bois, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof, that is to say:—

My Invention relates to an improved guard or safety apparatus applicable to tramway cars and other vehicles for the purpose of preventing accidents to passengers or others who may fall or be thrown down in the path of the said vehicles, and it consists in covering or enclosing entirely or partially by a guard or protector the wheels of the said vehicles and the space between the frames of such vehicles and the rails, thus preventing the possibility of persons falling or rolling under the said cars or vehicles, and being injured by the wheels, as frequently happens when the wheels are left unguarded.

The guard or safety apparatus with which I cover or enclose the wheels of tramway cars or other vehicles consists of a shield of sheet metal, or a grating of iron or other bars, or a trellis or network of wire or other material affixed to a metal or other frame shaped for the purpose.

It is desirable that the said guard or safety apparatus be so connected to the vehicle that its lower edge be constantly at the same distance from the rails, and as near the said rails as possible. I therefore mount the said guard upon or suspend it to the axles of the wheels, or by preference to the axle boxes of the said wheels. When the said guard is supported directly on the axles suitable bearings arranged to support the guard rest upon the said axles. When the guard is supported by the axle boxes each of the said axle boxes at that part where it projects from the axle guard is provided with friction rollers either grooved or flanged, mounted and capable of revolving on axes carried by the said axle box, or by an arm or plate affixed thereto. The said friction rollers are intended to hold the said guard, and to guide it in any vertical motion which might be communicated accidentally thereto. For this purpose I make in the guard framing vertical slides or slots, which fit exactly upon the friction rollers on each axle box, allowing however a certain amount of play or travel below the lower friction rollers.

If preferred the arrangement of the friction rollers herein-before described may be inverted, that is to say, the slots or slides may be formed in or on the axle boxes, and the friction rollers may be mounted on the guard frame, or a similar effect may be obtained by means of sliding pieces on the axle box or on the guard frame working in slides formed in the guard frame or axle box respectively, or the said frame may be connected to each of the axle boxes by rods adjusted as in an ordinary link motion.

It will be readily understood that the guard frame being supported or suspended, as herein-before described, and being adjusted so that its lower edge is at the required distance above the rails, it will invariably maintain its level as long as the wheels of the car are upon the rails, but should the said wheels from any cause leave the rails the lower edge of the guard might come in contact with the ground or pavement, and strike against any stones or other obstructions in the way. I therefore mount upon the lower part of the guard frame a certain number of small wheels projecting below the said guard to within a short distance of the rails. The said wheels support the guard when on the ground, and roll over any inequalities in the road. The said safety guard is made to extend down from near the under part of the frame of the car or vehicle to within a short distance of the rails, and all round the car or vehicle, passing behind the steps and under the ends of the said vehicle, or one safety guard may be made to cover or enclose the wheels on one side of the car and another safety guard may be used to cover or enclose the wheels on the other side of the said car, or each wheel may be covered or enclosed separately by one of my safety guards. Apertures closed by suitable doors may be made in different parts of my safety guards.

Having explained the nature of my Invention I will proceed to describe with reference to the accompanying Drawings means pursued by me in carrying the same into effect.

Description of the Drawings.

Figure 1 represents by longitudinal side view a tramway car to which is applied a guard or safety apparatus constructed according to my Invention; Figure 1^a is a detached view of part of Figure 1 drawn to an enlarged scale, showing the mode adopted for mounting the guard or safety apparatus, and suspending it to the axle boxes; Figure 2 is a transverse section of Figure 1^a taken through the line A, B.

A, A, is the tramway car; B, B, are the axle boxes; *a, a,* is the guard or safety apparatus, which consists of a network of wire affixed to the frame *b, b.* Opposite each of the axle boxes B the said frame *b, b,* is formed with upright slide bars b^1, b^1, connected together at top and bottom, and forming together a channel b^2, in which the guides or friction rollers, herein-after described, are capable of moving up and down. Upon the lower end of each of the axle boxes B, B, is formed or affixed a bracket or supporting piece *c,* carrying the guide rollers *d, d,* which are capable of rotatory motion, and serve to hold and guide the slide bars b^1, b^1. To the said supporting piece *c* is attached one end of a chain *e,* the other end of which chain is affixed to the frame *b* of the guard *a.* By this means the guard *a* is suspended to the axle boxes B, and its lower edge is kept constantly at the same distance from the rails. *f, f,* are guide rollers mounted on the frame of the car, the said guide rollers being capable of motion up and down in the channel b^2 as the car is caused to rise and fall by the action of its bearing springs, and the said rollers *f, f,* are for the purpose of holding and guiding the upper part of the bars b^1.

If preferred suitable slides may be substituted for the guide rollers *d, d,* and *f, f,* herein-before described.

g, *g*, are small wheels mounted on the lower part of the frame *b* for the purpose of supporting the guard or safety apparatus *a* should the wheels of the car leave the rails. +

Having now described the nature of my Invention, and means which I adopt in carrying the same into effect, I would have it understood that I do not confine myself to the precise arrangements of parts as shewn, as the same may be varied without departing from the nature of my Invention, but I claim as my Invention of an improved guard or safety apparatus applicable to tramway cars or other vehicles,—

First. Enclosing entirely or partially the wheels (collectively or separately) and the space between the frame of such vehicles and the rails by means of a shield of sheet metal, or a grating of bars, or a trellis, or a network of wire or other suitable material affixed to a suitable frame mounted on and supported by the axles or axle boxes of the said vehicle, such frame being suitably guided and provided at its lower edge with wheels, substantially as herein-before described and illustrated in the accompanying Drawings.

Secondly. The construction and arrangement of the said guard or safety apparatus, substantially as described and represented.

In witness whereof, I, the said Alexis Bois, have hereunto set my hand and seal, this Twenty-sixth day of June, in the year of our Lord One thousand eight hundred and seventy-five.

ALEXIS BOIS. (L.S.)

LONDON:
Printed by George Edward Eyre and William Spottiswoode,
Printers to the Queen's most Excellent Majesty. 1875.